CLAIMS

1. A tire uniformity measurement method, comprising the steps of:

mounting a tire on a spindle of a uniformity measurement apparatus;

pressing a circumferential surface of a rotating drum against the tread surface of the tire with a first pressing force;

rotating the tire around rotational axis thereof; and

computing the forces which the tire acts on first and second planes of the tire while the tire is rotating, the first plane being perpendicular to the rotational axis and in one sidewall side of the tire, the second plane being perpendicular to the rotational axis and in the other sidewall side of teh tire, the forces being computed based on a measured values obtained by measuring forces transmitted to the spindle from the tire at first and second positions, the first and second positions having different distances from the tire in the rotational axis direction.

2. A method according to claim 1, wherein said method computes the components of the forces acting on first and second planes, respectively, each of the components being in the direction tangential to both of the tire and the rotating drum.

3. A method according to claim 1, wherein the first plane

includes the one sidewall of the tire and the second plane includes the other sidewall of the tire.

4. A method according to any of claims 1-3, wherein the first pressing force is determined by dividing the weight of a vehicle on which the tire is mounted by the number of tires mounted on the vehicle.

5. A method according to claim 4, wherein said method measures forces by which the tire acts on the first and second planes of the tire while the tire is rotating and the circumferential surface of the rotating drum is pressed against the tread surface of the tire with a second pressing force, the second pressing force producing a friction force between the rotating drum and the tire, the friction force being so large as enough to prevent free rotation of the rotating drum and is smaller than the measurement error of the forces measured at the first and second positions.

6. A method according to claim 5, wherein one of the forces which the tire acts on first and second planes of the tire exceeds a predetermined value when the circumferential surface of the rotating drum is pressed against the tread surface of the tire with the first pressing force, the pressing force with which the circumferential surface of the rotating drum is pressed against the tread surface of the tire is changed into the second pressing force, and the forces which the tire acts

on the first and second planes of the tire are measured.

7. A method according to any of claim 1-3, wherein a calibration is performed on uniformity measurement apparatus using the result of measurement of the forces at the first and second positions when a predetermined weight is attached at a predetermined position on the first plane of a balanced tire and when the predetermined weight is attached at a predetermined position on the second plane of a balanced tire.

8. A tire uniformity measurement apparatus, comprising:

a spindle for rotating a tire around the rotational axis thereof;

a rotating drum pressed against the tread of the tire with a first pressing force, the rotating drum being adapted to rotate around the rotational axis thereof as the tire rotates;

a sensor for measuring force transmitted from the tire to said spindle, the force being measured at a first position and a second position, the first and second positions having different distances from the tire in the rotational axis direction; and

a computing means for computing the forces by which the tire acts on first and second plane, the force on the first plane being perpendicular to the rotational axis and in one sidewall side of the tire, the force on the second plane being perpendicular to the rotational axis and in the second sidewall side of the tire, the computing being performed based on the

results of measurements by said sensor.

9. An apparatus according to claim 8, wherein said computing means computes the components of the forces acting on first and second planes, respectively, each of the components being in the direction tangential to both of the tire and the rotating drum.

10. An apparatus according to claim 8, wherein the first plane includes the one sidewall of the tire and the second plane includes the other sidewall of the tire.

11. An apparatus according to claim 8, wherein the first pressing force is determined by dividing the weight of a vehicle on which the tire is mounted by the number of tires mounted on the vehicle.

12. An apparatus according to any of claims 8-11, wherein said apparatus measures forces by which the tire acts on the first and second planes of the tire while the tire is rotating and the circumferential surface of said rotating drum is pressed against the tread surface of the tire with a second pressing force, the second pressing force producing a friction force between said rotating drum and the tire, the friction force being so large as enough to prevent free rotation of said rotating drum and is smaller than the measurement error of the forces measured at the first and second positions.

13. An apparatus according to claim 12, wherein one of the forces which the tire acts on first and second planes of the tire exceeds a predetermined value when the circumferential surface of said rotating drum is pressed against the tread surface of the tire with a first pressing force, the pressing force with which the circumferential surface of a rotating drum is pressed against the tread surface of the tire is changed into the second pressing force, and the forces which the tire acts on the first and second planes of the tire are measured.

14. An apparatus according to any of claims 8-11, further comprising a tire cutting means for cutting the tire so that the amplitude of fluctuation of the force by which the tire acts on the first plane and the amplitude of fluctuation of the force by which the tire acts on the second plane are decreased, the forces being measured when said rotating drum is pressed against the tread of the tire with the first pressing force.

15. An apparatus according to claim 12, further comprising a tire cutting means for cutting the tire so that the amplitude of fluctuation of the force by which the tire acts on the first plane and the amplitude of fluctuation of the force by which the tire acts on the second plane are decreased, the forces being measured when said rotating drum is pressed against the tread of the tire with the second pressing force.

16. An apparatus according to any of claims 8-12, further comprising a marking means for marking the position at which the tire should be cut and the amount by which it should be cut so that the amplitude of fluctuation of the force by which the tire acts on the first plane and the amplitude of fluctuation of the force by which the tire acts on the second plane will be decreased, the forces being measured when said rotating drum is pressed against the tread of the tire with the first pressing force.

17. An apparatus according to claim 12, further comprising a marking means for marking the position at which the tire should be cut and the amount by which it should be cut so that the amplitude of fluctuation of the force by which the tire acts on the first plane and the amplitude of fluctuation of the force by which the tire acts on the second plane will be decreased, the forces being measured when said rotating drum is pressed against the tread of the tire with the second pressing force.